aloe ash. Can also use other pesticide powders such as Lihawu to treat seeds.

4.0 HARVESTING AND STORAGE

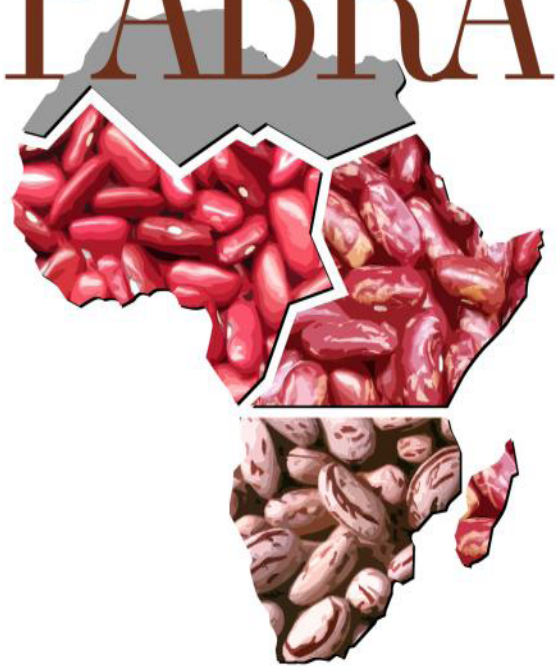
- The bean crop has to be harvested when most of the pods have started drying but not allowing them to be too dry as this can lead to shattering. Harvesting has to be done in the morning hours before it is too hot to avoid loss through shattering.
- After harvesting beans need to be stored in a cool dry place with good aeration, to continue to dry properly in readiness for shelling.
- When the beans have been shelled, they need to be protected from insect pests such as bruchids which lower their quality. High quality beans bring high income to the family.

CIAT

Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture
Consultative Group on International Agricultural Research

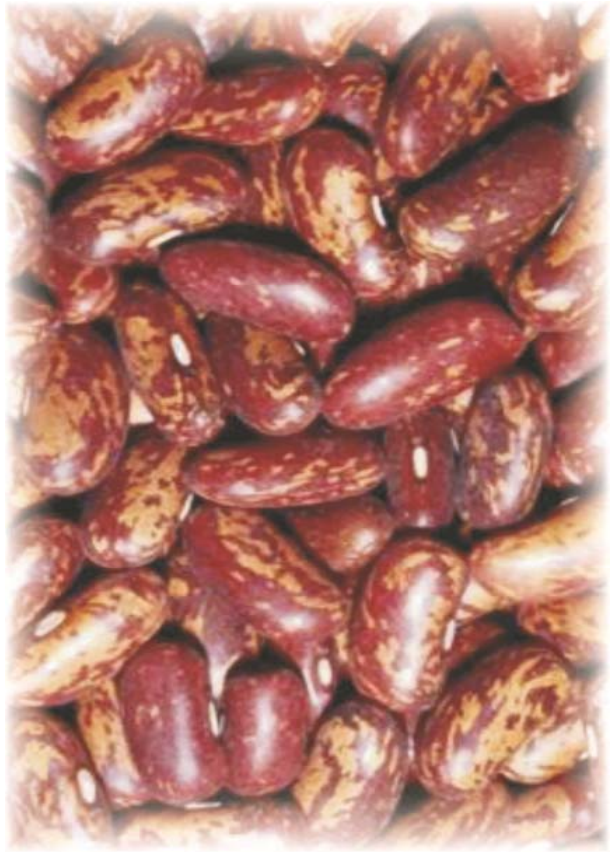
Pan-Africa Bean Research Alliance

PABRA



Ministry of Agriculture

BEAN PRODUCTION GUIDE FOR SWAZILAND



1.0 INTRODUCTION

Beans are an important crop for food and income generation in Swaziland. They do very well in the higher areas of the country although can be grown in all the regions. They are also the second legume to Swazi farmers after groundnuts in importance. Different farmers grow beans for different uses such as leaves, green beans or dry beans.

2.0 PREPARING FOR PLANTING

2.1 VARIETIES

There is a wide range of bean varieties a farmer can choose from in Swaziland. These also differ in their maturity periods.

Cranbery Bush Argentina– this variety is an early maturity type. It takes about 65-70 days to mature and it can yield up to 1400 kg/ha. It is a speckled sugar bean.

Sugar 131– this variety takes about 110 days to maturity and has a yield potential of about 2100 kg/ha. It is a speckled sugar bean being dominated by the red colour.

Cal 143– it takes about 95 days to reach maturity and has a yield potential of up to 2800 kg/ha. This variety is also a speckled sugar bean dominated by the red colour.

Kranskop– this variety also takes about 100 days to reach maturity and can yield up to 2700 kg/ha. It has bean nicknamed Makhuluskobho by farmers and it's a speckled sugar bean.

Bio Nua 45– this is a biofortified bean variety with high content of zinc and iron. It takes about 95 to reach maturity and has a yield potential of about 2500 kg/ha. This variety is a red mottled sugar bean.

2.2 RAINFALL AND SOIL REQUIREMENTS

- Beans grow best on soils with a pH ranging from 5.0 to 5.5
- They require rainfall of about 400 –500 mm that is evenly distributed during the growth period of the crop. Temperatures above 30^{o}C during the flowering period leads to abortion.

2.3 LAND PREPARATION

- Beans are usually intercropped with maize, so a medium soil tilth is prepared for their planting. Even when planted as a mono-crop, the land has to be well prepared as in maize preparation.

2.4 PLANTING

- The crop can be planted at a spacing of 45-60cm between rows and 8-10cm between plants.
- Suitable time**:** Beans do not stand for frost as well as extreme heat especially during flowering and pod formation, so when planning for planting make sure you consider the climate of your area. The recommended periods for planting in the different regions of Swaziland are as follows:
- **Highveld**: October – February
- **Middleveld**: August-September: January—March
- **Lubombo Plateu**: September-October : February –March
- **Lowveld**: February—March and July under irrigation

2.5 FERTILISER REQUIREMENTS

- Apply 200-300kg/ha of 2.3.2 (22) as a basal and100-150kg/ha of LAN for topdressing.
- Beans have the ability to fix atmospheric nitrogen in the soil, so they require little or no topdressing. Early application of nitrogen fertiliser can lead to high vegetative growth of the plant with less pods formed.
- Nitrogen fertiliser can be applied at 21 days after emergence of the crop.

2.6 PLANT PROTECTION

2.6.1 Weed Control

- The bean crop has to be weeded atleast twice: first at two weeks after emergence, secondly at 3-4 weeks after the first weeding.
- Herbicides can also be used in weed control (Basagran or Dual).

2.6.2 Disease Control

- A lot of diseases affect beans, for example, bacteria blight, anthracnose, bean mosaic.
- Most of the diseases usually come with the seed, so make it is advisable to treat seed before planting

2.6.3 Pest Control

- There are a lot of pests which affect the bean crop. Some of these pests include: CMR beetle (*Mylabris* spp) ,Bean fly (stem maggots) and bruchids.
- **CMR beetles**: they do not cause severe damage, so upon being identified, it is advisable that you collect and crush physically.
- **Bean fly**: this pest is a big problem in bean production and so urgent control measures has to be undertaken immediately it is identified. To control the pest, use endolsulfan to treat the seeds.
- **Bruchids:** this pest attack stored beans. This can be controlled by treating stored grain with wood or